BCS6B15 Programming Laboratory IV

Android Programming

B. Sc. Computer Science Programme

University of Calicut

Operating System : **Ubuntu 16.04 / Windows 7/ 8/ 10**

IDE : **Android Studio 3.5.2**

Compile With: **API 22: Android 5.1 X Lollipop Version**

Package: **com.example**

CONTENTS

Sl.No	Title	Page. No
1	Hello World	3
2	Addition	4
3	Date and Time Dialog Box	6
4	Alert Box	8
5	Context Menu	10
6	Radio Button	12
7	Spinner	14
8	Timer	16
9	Check Box	19
10	Date Time Picker	22
11	Grid View	25
12	Image View	27
13	List View	29
14	Text View	31
15	Multiplication Table	33
16	IP Address	35
17	Background Colour	37
18	Background Image	39
19	Array Adapter	41
20	Explicit Intent	43
21	Login (Optional)	----

1. Hello World

Aim: Write a Program to Toast Hello World

MainActivity.java

```
package com.example.lab1toasting;
import android.app.Activity;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity
{
  @Override
  protected void onResume()
  {
     Toast.makeText(getApplicationContext(),"Hello World !!!!",Toast.LENGTH_LONG).show();
     super.onResume();
  }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
  xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:orientation="vertical"
  tools:context=".MainActivity">
</LinearLayout>
```

Screenshot

2. Addition

Aim: Write a Program to add two numbers

MainActivity.java

```
package com.example.lab2addition;
import androidx.appcompat.app.AppCompatActivity;
import android.content.DialogInterface;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity
{
  EditText n1,n2;
  Button b1;
  TextView res;
  int a,b,sum;
  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    n1=(EditText)(findViewById(R.id.txtnum1));
    n2=(EditText)(findViewById(R.id.txtnum2));
    res=(TextView)(findViewById(R.id.txtResult));
    b1=(Button)(findViewById(R.id.btnAdd));
    b1.setOnClickListener(new View.OnClickListener()
    {
      @Override
      public void onClick(View v)
      {
        if(n1.length()>0 && n2.length()>0)
        {
          a=Integer.parseInt(n1.getText().toString());
          b=Integer.parseInt(n2.getText().toString());
          sum=a+b;
          res.setText("Sum is "+sum);
        }
        else
          res.setText("Input the Numbers...");
      }
    });
  }
}
```


activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
  xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:app="http://schemas.android.com/apk/res-auto"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:orientation="vertical"
  tools:context=".MainActivity">

    <EditText
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/txtnum1"
      android:hint="First Number"
      android:inputType="number"/>
    <EditText
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/txtnum2"
      android:hint="Second Number"
      android:inputType="number"/>
    <Button
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/btnAdd"
      android:text="ADD"/>
    <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/txtResult"
      android:layout_gravity="center"/>
</LinearLayout>
```

Screenshot

3. Date and Time Dialog Box

Aim: Write a Program to display date and time using dialog box

MainActivity.java

```
package com.example.lab3dialogbox;
import androidx.appcompat.app.AppCompatActivity;
import androidx.fragment.app.DialogFragment;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import java.text.SimpleDateFormat;
import java.util.Calendar;
import android.app.AlertDialog;
import android.app.Dialog;
public class MainActivity extends AppCompatActivity
{
  Button b;
  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    b=(Button)findViewById(R.id.btnDialog);
    b.setOnClickListener(new View.OnClickListener()
    {
      @Override
      public void onClick(View v)
      {
        ShowDateTimeDialog DT=new ShowDateTimeDialog();
        DT.show(getSupportFragmentManager(),null);
      }
    });
  }
  public static class ShowDateTimeDialog extends DialogFragment
  {
    @Override
    public Dialog onCreateDialog(Bundle savedInstanceState)
    {
      Calendar c=Calendar.getInstance();
      SimpleDateFormat sdf=new SimpleDateFormat("dd-MMM-yyy HH:mm:ss");
      String strDate=sdf.format(c.getTime());
      AlertDialog.Builder builder=new AlertDialog.Builder(getActivity());
      builder.setTitle("Date and Time");
      builder.setMessage(strDate);
      builder.setNeutralButton("OK",null);
      return builder.create();
    }
```



```
  }}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
  xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:app="http://schemas.android.com/apk/res-auto"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  tools:context=".MainActivity">
  <Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/btnDialog"
    android:layout_centerHorizontal="true"
    android:text="Show Date and Time"/>
</RelativeLayout>
```

Screenshot

4. Alert Box

Aim: Write a Program to play an alert box with OK and cancel

MainActivity.java

```
package com.example.lab4alertbox;

import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity
{
  Button b;

  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    b=(Button)(findViewById(R.id.btnAlert));

    b.setOnClickListener(new View.OnClickListener()
    {
      @Override
      public void onClick(View v)
      {
        AlertDialog.Builder builder=new AlertDialog.Builder(MainActivity.this);
        builder.setCancelable(true);
        builder.setMessage("This is an Alert Box");
        builder.setPositiveButton("OK",null);
        builder.setNeutralButton("Cancel",null);
        AlertDialog myAlert=builder.create();
        myAlert.show();
      }
    });
  }
}
```


activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
  xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:app="http://schemas.android.com/apk/res-auto"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  tools:context=".MainActivity">
  <Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/btnAlert"
    android:layout_centerHorizontal="true"
    android:text="Show Alert Box"/>
</RelativeLayout>
```

Screenshot

5. Context Menu

Aim: Write a Program to create menu with three menu items

MainActivity.java

```
package com.example.lab5menu;
import android.app.Activity;
import android.os.Bundle;
import android.view.ContextMenu;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.view.ContextMenu.ContextMenuInfo;
import android.widget.LinearLayout;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity
{
  LinearLayout ll;
  @Override
  public void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    ll=(LinearLayout) findViewById(R.id.linearlayout);
    ll.setOnCreateContextMenuListener(this);
  }
  @Override
  public void onCreateContextMenu(ContextMenu menu, View v,ContextMenuInfo menuInfo)
      {
          super.onCreateContextMenu(menu, v, menuInfo);
          menu.add(0,0,0,"item 1");
          menu.add(0,1,1,"item 2");
          menu.add(0,2,2,"item 3");
      }
    @Override
    public boolean onContextItemSelected(MenuItem item)
    {
        super.onContextItemSelected(item);
        Toast.makeText(this, item.getTitle(), Toast.LENGTH_SHORT).show();
        return true;
    }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
android:layout_width="fill_parent"
android:layout_height="fill_parent"
android:orientation="vertical"
android:id="@+id/linearlayout">
  <TextView
     android:layout_width="wrap_content"
     android:layout_height="wrap_content"
     android:layout_marginTop="20dp"
      android:text="Long press on'Menu' to get options..."/>
  <TextView
     android:id="@+id/textView2"
     android:layout_width="wrap_content"
     android:layout_height="wrap_content"
     android:text="Menu"
     android:layout_marginTop="30dp"
     android:layout_marginLeft="20dp"
      android:textAppearance="?android:attr/textAppearanceLarge"></TextView>
</LinearLayout>
```

Screenshot

6. Radio Button

Aim: Write a Program to implement Radio Button Control

MainActivity.java

```
package com.example.lab6radiobutton;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity
{
   RadioButton rm,rf;
   RadioGroup rg;
   TextView t;

   @Override
   protected void onCreate(Bundle savedInstanceState)
   {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      rm=(RadioButton)findViewById(R.id.rdMale);
      rf=(RadioButton)findViewById(R.id.rdFemale);
      t=(TextView)findViewById(R.id.txtGender);
      rg=(RadioGroup)findViewById(R.id.rdGender);
      rg.setOnCheckedChangeListener(new RadioGroup.OnCheckedChangeListener()
      {
         @Override
         public void onCheckedChanged(RadioGroup group, int checkedId)
         {
            if (rm.isChecked())
               t.setText("You are a Man");
            if (rf.isChecked())
               t.setText("You are a Woman");
         }
      });
   }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout    xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
```



```
   android:orientation="vertical"
   tools:context=".MainActivity">

   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Select Your Gender"/>

   <RadioGroup
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/rdGender">

         <RadioButton
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/rdMale"
            android:text="Male"/>

         <RadioButton
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/rdFemale"
            android:text="Female"/>

   </RadioGroup>

   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/txtGender"/>

</LinearLayout>
```

Screenshot

7. Spinner

Aim: Write a Program to spin four items

MainActivity.java

```
package com.example.lab7spinner;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.Spinner;
public class MainActivity extends AppCompatActivity
{
   Spinner spin;
   private String[] spinArray;
   @Override
   protected void onCreate(Bundle savedInstanceState)
   {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      spin=(Spinner) findViewById(R.id.myspin);
      this.spinArray=new String[]{"Java","Python","PHP","Perl"};
      ArrayAdapter<String> adapter=new
ArrayAdapter<String>(this,android.R.layout.simple_spinner_item,spinArray);
      spin.setAdapter(adapter);
   }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:orientation="vertical"
   android:layout_height="match_parent"
   android:paddingTop="20dp"
   android:paddingHorizontal="20dp"
   tools:context=".MainActivity">
    <Spinner
       android:id="@+id/myspin"
       android:layout_width="match_parent"
       android:layout_height="80sp"
       android:layout_gravity="center_horizontal"
       android:spinnerMode="dropdown" />
</LinearLayout>
```


Screenshot

8. Timer

Aim: Write a Program to display a stop watch

MainActivity.java

```
package com.example.lab8timer;
import androidx.appcompat.app.AppCompatActivity;
import android.app.Activity;
import android.os.Bundle;
import android.os.Handler;
import android.os.SystemClock;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity
{

   private Button startButton;
   int isOn;
   private TextView timerValue;
   private long startTime = 0L ;
   private Handler customHandler = new Handler();
   long timeInMilliseconds = 0L ;
   long timeSwapBuff = 0L ;
   long updatedTime = 0L ;
   @Override
   public void onCreate(Bundle savedInstanceState)
   {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      isOn=0;
      timerValue = (TextView) findViewById(R.id.timerValue);
      startButton = (Button) findViewById(R.id.startButton);
      startButton.setOnClickListener(new View.OnClickListener()
      {
         public void onClick(View view)
         {
            if(isOn==0)
            {
               startTime = SystemClock.uptimeMillis();
               customHandler.postDelayed(updateTimerThread, 0);
               isOn=1;
               startButton.setText("Pause");
            }
            else
            {
               timeSwapBuff += timeInMilliseconds;
               customHandler.removeCallbacks(updateTimerThread);
```



```
               isOn=0;
               startButton.setText("Start");
            }
         }
      });

   }
   private Runnable updateTimerThread = new Runnable()
   {
      int secs,mins,milliseconds;
      public void run()
      {
         timeInMilliseconds = SystemClock.uptimeMillis() - startTime;
         updatedTime = timeSwapBuff + timeInMilliseconds;
         secs = (int) (updatedTime / 1000);
         mins = secs / 60;
         secs = secs % 60;
         milliseconds = (int) (updatedTime % 1000);
         timerValue.setText("" + mins + ":" + String.format("%02d", secs) + ":"+ String.format("%03d",
milliseconds));
         customHandler.postDelayed(this, 0);
      }
   };
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:orientation="vertical"
android:layout_height="match_parent" >
<TextView
   android:id="@+id/timerValue"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:layout_gravity="center"
   android:textSize="40sp"
   android:text="00:00:00" />

<Button
   android:id="@+id/startButton"
   android:layout_width="90dp"
   android:layout_height="45dp"
   android:layout_gravity="center"
   android:text="Start" />
</LinearLayout>
```


Screenshot

9. Check Box

Aim: Write a Program to implement CheckBox Control

MainActivity.java

```
package com.example.lab9checkbox;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity
{
   CheckBox mw,mr,ew,er;
   Button b;
   TextView res;
   String Summary;

   @Override
   protected void onCreate(Bundle savedInstanceState)
   {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      mr=(CheckBox)findViewById(R.id.chkMalRead);
      mw=(CheckBox)findViewById(R.id.chkMalWrite);
      er=(CheckBox)findViewById(R.id.chkEngRead);
      ew=(CheckBox)findViewById(R.id.chkEngWrite);
      res=(TextView)findViewById(R.id.res);
      b=(Button)findViewById(R.id.btn) ;
      b.setOnClickListener(new View.OnClickListener()
      {
         @Override
         public void onClick(View v)
         {
            Summary="";
            if (mr.isChecked())
               Summary+="Read Malayalam,";
            if (mw.isChecked())
               Summary+="write malayalam,";
            if (er.isChecked())
               Summary+="Read English,";
            if (ew.isChecked())
               Summary+="Write English";
            if (Summary.length()<10)
               res.setText("You are an illitrate!!");
            else
```



```
               res.setText("You can "+Summary);
         }
      });
   }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical"
   tools:context=".MainActivity">

   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Malayalam"/>

      <CheckBox
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
         android:id="@+id/chkMalRead"
         android:text="Read"/>
      <CheckBox
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
         android:id="@+id/chkMalWrite"
         android:text="Write"/>
   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="English"/>
      <CheckBox
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
         android:id="@+id/chkEngRead"
         android:text="Read"/>
      <CheckBox
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
         android:id="@+id/chkEngWrite"
         android:text="Write"/>
   <Button
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
```

```
    android:id="@+id/btn"
    android:text="OK"/>
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/res"/>
</LinearLayout>
```

Screenshot

10. Date Time Picker

Aim: Write a Program to Tselect current system time using date Time Picker

MainActivity.java

```
package com.example.lab10datetimepicker;

import androidx.appcompat.app.AppCompatActivity;

import android.app.DatePickerDialog;
import android.app.TimePickerDialog;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.DatePicker;
import android.widget.EditText;
import android.widget.TimePicker;

import java.util.Calendar;

public class MainActivity extends AppCompatActivity implements View.OnClickListener
{
   Button btnDatePicker,btnTimePicker;
   EditText txtDate,txtTime;
   private int mYear,mMonth,mDay,mHour,mMinute;

   @Override
   protected void onCreate(Bundle savedInstanceState)
   {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      btnDatePicker=(Button)findViewById(R.id.btn_date);
      btnTimePicker=(Button)findViewById(R.id.btn_time);
      txtDate=(EditText)findViewById(R.id.in_date);
      txtTime=(EditText)findViewById(R.id.in_time);
      btnDatePicker.setOnClickListener(this);
      btnTimePicker.setOnClickListener(this);
   }

   @Override
   public void onClick(View v)
   {
      if (v==btnDatePicker)
      {
         final Calendar c=Calendar.getInstance();
         mYear=c.get(Calendar.YEAR);
```



```
         mMonth=c.get(Calendar.MONTH);
         mDay=c.get(Calendar.DAY_OF_MONTH);
         DatePickerDialog datePickerDialog=new DatePickerDialog(this, new
DatePickerDialog.OnDateSetListener()
         {
            @Override
            public void onDateSet(DatePicker view, int year, int monthOfYear, int dayOfMonth)
            {
               txtDate.setText(dayOfMonth+"-"+(monthOfYear+1)+"-"+year);
            }
         },mYear,mMonth,mDay);
         datePickerDialog.show();
      }
      if (v==btnTimePicker)
      {
         final Calendar c=Calendar.getInstance();
         mHour=c.get(Calendar.HOUR_OF_DAY);
         mMinute=c.get(Calendar.MINUTE);
         TimePickerDialog timePickerDialog=new TimePickerDialog(this, new
TimePickerDialog.OnTimeSetListener()
         {
            @Override
            public void onTimeSet(TimePicker view, int hourOfDay, int minute)
            {
               txtTime.setText(hourOfDay+":"+minute);
            }
         },mHour,mMinute,false);
         timePickerDialog.show();
      }
   }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical"
   tools:context=".MainActivity">

   <EditText
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/in_date"
      android:text="date"/>
   <Button
```



```
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_gravity="right"
      android:text="Select Date"
      android:id="@+id/btn_date"/>
   <EditText
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Select Time"
      android:id="@+id/in_time"/>
   <Button
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_gravity="right"
      android:text="Select Time"
      android:id="@+id/btn_time"/>

</LinearLayout>
```

Screenshot

11. Grid View

Aim: Write a Program to display contacts using GridView control

MainActivity.java

```
package com.example.lab11gridview;

import androidx.appcompat.app.AppCompatActivity;

import android.database.Cursor;
import android.os.Bundle;
import android.provider.ContactsContract;
import android.widget.ArrayAdapter;
import android.widget.GridView;

import java.util.ArrayList;
import java.util.List;

public class MainActivity extends AppCompatActivity
{
   GridView gv;
   List<String> Names;

   @Override
   protected void onCreate(Bundle savedInstanceState)
   {

      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      Names=new ArrayList<String>();
      gv=(GridView)findViewById(R.id.gridview);
      Cursor
phones=getContentResolver().query(ContactsContract.CommonDataKinds.Phone.CONTENT_URI,null,
null,null,null);
      while (phones.moveToNext())
      {
         String
name=phones.getString(phones.getColumnIndex(ContactsContract.CommonDataKinds.Phone.DISPLAY
_NAME));
         Names.add(name);
      }
      phones.close();
      gv.setAdapter(new ArrayAdapter<String>(this,R.layout.cell,Names));
   }
}
```


activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
   <GridView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/gridview"
      android:padding="10dp"
      android:horizontalSpacing="10dp"
      android:numColumns="auto_fit"
      android:columnWidth="100dp"
      android:stretchMode="columnWidth"
      android:gravity="center"/>
</LinearLayout>
```

cell.xml

```
<?xml version="1.0" encoding="utf-8"?>
<TextView
   xmlns:android="http://schemas.android.com/apk/res/android"
   android:textSize="14sp"
   android:layout_width="match_parent"
   android:layout_height="match_parent">
</TextView>
```

AndroidManifest.xml

```
<uses-permission android:name="android.permission.READ_CONTACTS"/>
```

Screenshot

12. Image View

Aim: Write a Program to display image from a directory

MainActivity.java

```
package com.example.lab12imageview;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.database.Cursor;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.net.Uri;
import android.os.Bundle;
import android.provider.MediaStore;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity
{
   ImageView img,img1;
   Button bt;
   @Override
   protected void onCreate(Bundle savedInstanceSatae)
   {
      super.onCreate(savedInstanceSatae);
      setContentView(R.layout.activity_main);
      img=findViewById(R.id.img_id );
   }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoyt
   xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
   <ImageView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/img_id"
      android:src="@drawable/ic_launcher">
   </ImageView>
```



```
</LinearLayout>
```

Screenshot

13. ListView

Aim: Write a Program to display items in a list

MainActivity.java

```
package com.example.lab13listview;

import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.TextView;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;


public class MainActivity extends AppCompatActivity
{
   ListView lv;
   String[] DAYS = new String[]{"Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday",
"Saturday"};

   @Override
   protected void onCreate(Bundle savedInstanceState)
   {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      lv=(ListView) findViewById(R.id.lst);
      ArrayAdapter<String> adapter=new
ArrayAdapter<String>(this,android.R.layout.simple_list_item_1,DAYS);
      lv.setAdapter(adapter);
      lv.setOnItemClickListener(new AdapterView.OnItemClickListener()
      {
         @Override
         public void onItemClick(AdapterView<?> adapterView, View view, int i, long l)
         {
            Toast.makeText(getApplicationContext(),"Selected Item: "+((TextView)
view).getText(),Toast.LENGTH_SHORT).show();
         }
      });
   }
}
```

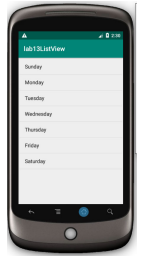

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical"
   android:padding="3dp"
   tools:context=".MainActivity">

   <ListView
      android:layout_width="match_parent"
      android:layout_height="match_parent"
      android:id="@+id/lst"/>

</LinearLayout>
```

Screenshot



14. Text View

Aim: Write a Program to fetch data from EditText and Display it in TextView

MainActivity.java

```
package com.example.lab14textview;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

import org.w3c.dom.Text;

public class MainActivity extends AppCompatActivity
{
  EditText e;
  Button b;
  TextView t;
  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      b=(Button)findViewById(R.id.bt);
      t=(TextView)findViewById(R.id.txt);
      b.setOnClickListener(new View.OnClickListener()
      {
        @Override
        public void onClick(View v)
        {
          e=(EditText)findViewById(R.id.inp);
          t.setText(e.getText().toString());
        }
      });
  }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
  xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:app="http://schemas.android.com/apk/res-auto"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="match_parent"
```



```
  android:layout_height="match_parent"
  android:orientation="vertical"
  tools:context=".MainActivity">

  <EditText
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/inp"
    android:layout_marginTop="10dp"
    android:hint="Enter your Name...."/>

  <Button
    android:id="@+id/bt"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:hint="OK"
    tools:layout_editor_absoluteX="0dp"
    tools:layout_editor_absoluteY="63dp" />

  <TextView
    android:id="@+id/txt"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:gravity="center"
    android:layout_marginLeft="50dp"
    android:textSize="20dp"
    android:layout_marginTop="75dp"
     />

</LinearLayout>
```

Screenshot

15. Multiplication Table

Aim: Write a Program to Tdisplay Multiplication Table of a given number

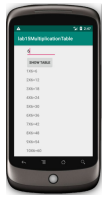
MainActivity.java

```
package com.example.lab15multiplicationtable;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity implements View.OnClickListener
{
  EditText e;
  Button b;
  TextView t;
  int ans=0;
  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    e=(EditText)findViewById(R.id.no);
    b=(Button)findViewById(R.id.bt);
    t=(TextView)findViewById(R.id.txt);
    b.setOnClickListener(this);
  }
  public void onClick(View v)
  {
    switch (v.getId())
    {
      case R.id.bt:
          StringBuffer sb= new StringBuffer();
          int res;
          String fs=e.getText().toString();
          int n= Integer.parseInt(fs);
          for (int i=1;i<=10;i++)
          {
            ans=(i*n);
            sb.append(i +"X"+n+"="+ans+"\n\n");
          }
          t.setText(sb);
          break;
    }  }
```


activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
  xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:app="http://schemas.android.com/apk/res-auto"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:orientation="vertical"
  tools:context=".MainActivity">
  <EditText
    android:layout_width="120dp"
    android:layout_marginLeft="50dp"
    android:layout_height="wrap_content"
    android:inputType="number"
    android:hint="Enter Number"
    android:id="@+id/no"/>
  <Button
    android:id="@+id/bt"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginLeft="50dp"
    android:text="SHOW TABLE" />
  <TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginLeft="50dp"
    android:textSize="15dp"
    android:id="@+id/txt"/>
  </LinearLayout>
```

Screenshot



16. IP Address

Aim: Write a Program to get IP Address of the device

MainActivity.java

```
package com.example.lab16ipaddress;

import androidx.appcompat.app.AppCompatActivity;

import android.content.DialogInterface;
import android.net.wifi.WifiManager;
import android.os.Bundle;
import android.text.format.Formatter;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity
{
  Button b;
  TextView t;
  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    b=(Button)findViewById(R.id.btn);
    b.setOnClickListener(new View.OnClickListener()
    {
      @Override
      public void onClick(View v)
      {
        t=(TextView)findViewById(R.id.txt);
        WifiManager
wm=(WifiManager)getApplicationContext().getSystemService(WIFI_SERVICE);
        String ip;
        ip= Formatter.formatIpAddress(wm.getConnectionInfo().getIpAddress());
        t.setText("IP Address :"+ip);

      }
    });
  }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
```



```
<LinearLayout
  xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:app="http://schemas.android.com/apk/res-auto"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:orientation="vertical"
  tools:context=".MainActivity">

  <Button
    android:id="@+id/btn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginLeft="95dp"
    android:layout_marginTop="90dp"
    android:text="Get IP Address" />

  <TextView
    android:id="@+id/txt"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginLeft="95dp" />

</LinearLayout>
```

AndroidManifest.xml

```
<uses-permission android:name="android.permission.ACCESS_WIFI_STATE" />
```

Screenshot

17. Background Colour

Aim: Write a Program to change Background colour of an activity

MainActivity.java

```
package com.example.lab17bgcolor;
import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.LinearLayout;
public class MainActivity extends AppCompatActivity
{
  Button b;
  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    final LinearLayout l1=(LinearLayout)findViewById(R.id.r1);
    b=(Button)findViewById(R.id.btn);
    b.setOnClickListener(new View.OnClickListener()
    {
      @Override
      public void onClick(View v)          {
        l1.setBackgroundColor(Color.DKGRAY);
      }
    });
  }}
```

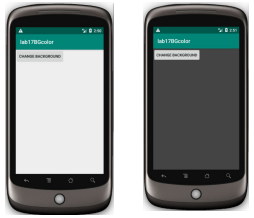
activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
  xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:app="http://schemas.android.com/apk/res-auto"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:id="@+id/r1"
  tools:context=".MainActivity">
  <Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/btn"
    android:text="Change Background"/>
```



```
</LinearLayout>
```

Screenshot



18. Background Image

Aim: Write a Program to change background image of an activity

MainActivity.java

```
package com.example.lab18bgimage;
import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.LinearLayout;
public class MainActivity extends AppCompatActivity
{
  Button b;
  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    final LinearLayout l1=(LinearLayout)findViewById(R.id.r1);
    b=(Button)findViewById(R.id.btn);
    b.setOnClickListener(new View.OnClickListener()
    {
      @Override
      public void onClick(View v)          {
        l1.setBackgroundResource(R.drawable.ic_launcher);
      }
    });
  }}
```

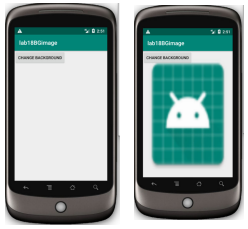
activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout     xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:app="http://schemas.android.com/apk/res-auto"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:id="@+id/r1"
  android:backgroundTintMode="src_over"
  tools:context=".MainActivity">
  <Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/btn"
    android:text="Change Background"/>
```



```
</LinearLayout>
```

Screenshot



19. Array Adapter

Aim: Write a Program to implement ArrayAdapter

MainActivity.java

```
package com.example.lab19arrayadapter;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;

public class MainActivity extends AppCompatActivity
{
   ListView lv;;
   String fruits[]= {"Mango","Apple","Orange","Pinapple","Jack Fruit"};
   @Override
   protected void onCreate(Bundle savedInstanceState)
   {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      lv=(ListView)findViewById(R.id.lst);
      ArrayAdapter<String> arr=new
ArrayAdapter<String>(this,R.layout.activity_list_view,R.id.txtvw,fruits);
      lv.setAdapter(arr);
   }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">

   <ListView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/lst"
      />

</LinearLayout>
```


activity_list_view

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical">

   <TextView
      android:layout_width="wrap_content"
      android:layout_height="30dp"
      android:layout_gravity="center"
      android:id="@+id/txtvw"/>
</LinearLayout>
```

Screenshot

20. Explicit Intent

Aim: Write a Program to start another activity from your activity

MainActivity.java

```
package com.example.lab20intent;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity
{
   Button b;
   @Override
   protected void onCreate(Bundle savedInstanceState)
   {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      b=(Button)findViewById(R.id.btn);
      b.setOnClickListener(new View.OnClickListener()
      {
         @Override
         public void onClick(View v)
         {
            Intent i=new Intent(MainActivity.this,MainActivity1.class);
            startActivity(i);
         }
      });
   }
}
```

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical"
   tools:context=".MainActivity">
```



```
   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_marginTop="20dp"
      android:text="This is First Activity"/>
   <Button
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="GOTO NEXT"
      android:id="@+id/btn"/>
</LinearLayout>
```

MainActivity1.java

```
package com.example.lab20intent;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity1 extends AppCompatActivity
{

   @Override
   protected void onCreate(Bundle savedInstanceState)
   {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main1);

   }
}
```

activity_main1.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
   android:layout_width="match_parent"
   android:layout_height="match_parent">

   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="This is Second Activity"/>

</LinearLayout>
```


AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
   package="com.example.lab20intent">

   <application
      android:allowBackup="true"
      android:icon="@mipmap/ic_launcher"
      android:label="@string/app_name"
      android:roundIcon="@mipmap/ic_launcher_round"
      android:supportsRtl="true"
      android:theme="@style/AppTheme">
      <activity android:name=".MainActivity">
         <intent-filter>
            <action android:name="android.intent.action.MAIN" />

            <category android:name="android.intent.category.LAUNCHER" />
         </intent-filter>
      </activity>
      <activity android:name=".MainActivity1"
         android:label="@string/app_name"></activity>
   </application>

</manifest>
```

Screenshot